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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|--------------------------------|------------------------|
| 09/848,259 | 05/04/2001 | Daniel R. Jeske | 2925-0575P | 6336 |
| 30594 7590 12/11/2007 HARNES, DICKEY & PIERCE, P.L.C. P.O. BOX 8910 RESTON, VA 20195 | | | EXAMINER AGHDAM, FRESHTEH N | |
| | | | ART UNIT 2611 | PAPER NUMBER |
| | | | MAIL DATE 12/11/2007 | DELIVERY MODE PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/848,259

Applicant(s)

JESKE ET AL.

Examiner

Freshteh N. Aghdam

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 5 is/are rejected.
- 7) ☒ Claim(s) 2 and 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 9/19/2007 have been fully considered but they are not persuasive.

Applicant's Arguments:

Regarding claims 1, 3, and 5, page 4, the applicant argues that SNR estimation is different than SINR estimation. Moreover, the applicant argues that Raheli and Milan neither alone or in combination does not suggest or teach the limitation of "converting the received plurality of data symbol samples into plurality of quasi-pilot symbol samples based on the estimated polarities; and generating an SINR estimate based on the plurality of quasi-pilot symbols samples such that the SINR estimate is not dependent only on the polarities of the plurality of received data symbol samples."

Examiner's Response:

Regarding the first argument set forth above, the examiner disagrees with the applicant because SNR and SINR are interchangeable concepts depending on what considered as noise (e.g. noise is modeled as only additive white Gaussian noise or noise is modeled as additive white Gaussian noise plus interference when the interference could be ISI, ACI, and so forth). The applicant models noise as only the additive white Gaussian noise (e.g. SINR is equated to SNR) see page 2, lines 14-17.

Regarding the second argument set forth above, the examiner disagrees with the applicant and believes that the combination of Raheli and Milan discloses the recited claimed limitation because Raheli discloses converting the received plurality of data

symbol samples into plurality of quasi-pilot symbol samples in a differential receiver by performing differential decoding and utilizing phase shift keying modulation method; and generating a SNR estimate based on the plurality of quasi-pilot symbol samples (e.g. based on the result of differential decoding; Col. 2, lines 20-23) and Milan discloses a differential receiver that estimates the polarities of the received symbol samples (Fig. 3, (94); because when BPSK modulation scheme is utilized only the polarity of the signal is modulated; therefore, the polarities/signs of the received data symbols are estimated in order for the received BPSK modulated signal to be demodulated) and based on the estimation result the differential decoding is performed (Fig. 3, (98)). Since differential decoding is dependent on both the BPSK demodulated received signal and the delayed BPSK demodulated signal; therefore, the SNR estimate is not dependent only on the polarities of the plurality of received data symbol samples.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raheli et al (US 6,389,079), and further in view of Milan et al (US 2006/0117127).

As to claims 1 and 3, Raheli discloses a method of and/ or apparatus for estimating signal to noise ratio that includes converting the received plurality of data

symbol samples into plurality of quasi-pilot symbol samples in a differential receiver by performing differential decoding and utilizing phase shift keying modulation method; and generating a SNR estimate based on the plurality of quasi-pilot symbol samples (e.g. based on the result of differential decoding; Col. 2, lines 20-23). Raheli does not expressly disclose converting the received plurality of data symbol samples into plurality of quasi-pilot symbol samples based on the result of estimating polarities of the received data symbol samples; and estimating the SNR value such that the SNR estimate is not dependent only on the polarities of the plurality of received data symbol samples. Milan discloses a differential receiver that estimates the polarities of the received symbol samples (Fig. 3, (94) because when BPSK modulation scheme is utilized only the polarity of the signal is modulated; therefore, the polarities/signs of the received data symbols are estimated in order for the received BPSK modulated signal to be demodulated) and based on the estimation result the differential decoding is performed (Fig. 3, (98)). Since differential decoding is dependent on both the BPSK demodulated received signal and the delayed BPSK demodulated signal; therefore, the SNR estimate is not dependent only on the polarities of the plurality of received data symbol samples. One of ordinary skill in the art would recognize that it is obvious to estimate SNR instead of SINR when noise is considered channel noise plus interference noise or to estimate SINR instead of SNR when the noise plus interference is modeled as additive white Gaussian noise. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Milan with Raheli in order to resolve phase ambiguity of the data signal that is BPSK modulated by employing differential detection.

As to claim 5, Raheli discloses a method of and/ or apparatus for estimating signal to noise ratio includes converting the received plurality of data symbol samples into plurality of quasi-pilot symbol samples in a differential receiver by performing differential decoding and utilizing phase shift keying modulation method; and generating a SNR estimate based on the plurality of quasi-pilot symbol samples (e.g. based on the result of differential decoding; Col. 2, lines 20-23). Raheli does not expressly disclose converting the received plurality of quasi-pilot symbol samples based on the estimated polarities of the received data symbol samples. Milan discloses a differential receiver that estimates the polarities of the received symbols samples (Fig. 3, (94) because when BPSK modulation scheme is utilized only the polarity of the signal is modulated; therefore, the polarities/signs of the received data symbols are estimated in order for the received BPSK modulated signal to be demodulated) and based on the estimation result performs differential decoding (Fig. 3, (98)). One of ordinary skill in the art would recognize that it is obvious to estimate SNR instead of SINR when noise is considered channel noise plus interference noise or to estimate SINR instead of SNR when the noise plus interference is modeled as additive white Gaussian noise. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Milan with Raheli in order to resolve phase ambiguity of the data signal that is BPSK modulated by employing differential detection.

Allowable Subject Matter

Claims 2 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Willes et al (US 2002/0064218) see figure 3, blocks 308 and 309.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is 571-272-6037. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Freshteh Aghdam
Examiner
Art Unit 2611

November 27, 2007


CHIEH M. FAN
SUPERVISORY PATENT EXAMINER